

Application No. 10/604,024
Docket No. 128786
Amendment dated April 21, 2005
Reply to Office Action of January 21, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A process comprising the steps of:
forming ~~of selectively removing layers of~~ a coating system on a
surface ~~from a surface~~ of a component, the coating system being formed by
depositing ~~comprising~~ an inner metallic coating layer, depositing an outer
metallic ~~and an outer~~ coating layer on the inner metallic coating layer so that
the outer metallic coating layer has the same composition as the inner metallic
coating layer but is less dense than the inner metallic coating layer, and then
depositing a ceramic topcoat on the outer metallic coating layer; and ~~the~~
~~method comprising the step of~~

directing a jet of liquid at the component, the outer metallic coating
layer being formed to be sufficiently less dense than the inner metallic coating
layer such that the ceramic topcoat and ~~to remove~~ the outer metallic coating
layer are simultaneously removed by the jet without removing the inner metallic
coating layer.

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Claim 2 (currently amended): A process according to claim 1, wherein the inner and outer metallic coating layers have different microstructures.

Claim 3 (currently amended): A process according to claim 1, wherein the jet does not contain any abrasive media and is emitted from a nozzle at a pressure of at least 2800 bar.

Claim 4 (original): A process according to claim 3, wherein the jet is emitted from the nozzle at an angle of about 30 to about 90 degrees to the surface of the component.

Claim 5 (original): A process according to claim 3, wherein the pressure of the jet is about 3500 bar and the jet is emitted from the nozzle at an angle of about ninety degrees to the surface of the component.

Claim 6 (original): A process according to claim 1, wherein the jet is directed at the component with an apparatus that substantially maintains the angle of the jet to the surface of the component.

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Claim 7 (currently amended): A process according to claim 1, wherein after the ceramic topcoat and the outer metallic coating layer are removed, the process further comprises depositing a replacement outer metallic coating layer on the inner metallic coating layer and then a replacement ceramic topcoat on the replacement outer metallic coating layer. ~~the coating system is a thermal barrier coating system and further comprises on the outer coating layer a ceramic topcoat having vertical cracks therethrough, the inner and outer coating layers are inner and outer metallic bond coat layers, respectively, and the jet is directed at the component to simultaneously remove the topcoat and the outer metallic bond coat layer without removing the inner metallic bond coat layer.~~

Claim 8 (currently amended): A process according to claim 7, wherein the jet roughens the surface of the inner metallic coating layer and thereby promotes adhesion of the replacement outer metallic coating layer to the inner metallic coating layer. ~~bond coat layer.~~

Claim 9 (currently amended): A process according to claim 1, ~~claim 7,~~ further comprising the step of depositing the inner metallic coating ~~bond coat~~ layer by a high-velocity oxy-fuel process.

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Claim 10 (currently amended): A process according to claim 1,
~~claim 7~~, further comprising the step of depositing the outer metallic coating
~~bond coat~~ layer by a plasma spray process.

Claim 11 (currently amended): A process according to claim 1,
~~claim 7~~, wherein the compositions of the inner and outer metallic coating ~~bond~~
~~coat~~ layers are MCrAlY, where M is selected from the group consisting of iron,
cobalt, nickel, and mixtures thereof.

Claim 12 (currently amended): A process according to claim 1,
~~claim 7~~, further comprising the step of depositing the ceramic topcoat by a
plasma spray process.

Claim 13 (original): A process according to claim 12, wherein the
ceramic topcoat has a tensile strength of at least about 280 bar.

Claim 14 (original): A process according to claim 1, wherein the
component is a component of a gas turbine engine.

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Claim 15 (currently amended): A process comprising the steps of:
forming ~~of selectively removing layers of~~ a thermal barrier coating system on a surface ~~from a surface~~ of a gas turbine engine component, the coating system being formed by depositing ~~comprising~~ an inner metallic coating layer, depositing an outer metallic ~~and an outer~~ coating layer on the inner metallic coating layer so that the outer metallic coating layer has the same composition as the inner metallic coating layer but is less dense than the inner metallic coating layer, and then depositing a ceramic topcoat on the outer metallic coating layer; and ~~the method comprising the step of~~
directing a non-abrasive jet of liquid at the component, the outer metallic bond coat layer being formed to be sufficiently less dense than the inner metallic bond coat layer such that ~~to simultaneously remove~~ the topcoat and the outer metallic bond coat layer are simultaneously removed by the jet without removing the inner metallic bond coat layer, the jet being emitted from a nozzle at a pressure of at least 3100 bar and at an angle of about 45 to about 90 degrees to the surface of the component, the jet being directed at the component with an apparatus that substantially maintains the angle of the jet to the surface of the component.

Claim 16 (original): A process according to claim 15, wherein the

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liquid is water.

Claim 17 (original): A process according to claim 15, wherein the pressure of the jet is about 3100 to about 3800 bar.

Claim 18 (original): A process according to claim 15, wherein the pressure of the jet is about 3500 bar and the jet is emitted from the nozzle at an angle of about ninety degrees to the surface of the component.

Claim 19 (original): A process according to claim 15, wherein the inner and outer metallic bond coat layers have the same composition formed of MCrAlY, where M is selected from the group consisting of iron, cobalt, nickel and mixtures thereof.

Claim 20 (original): A process according to claim 15, wherein the ceramic topcoat has a tensile strength of about 410 bar to about 800 bar.

Claim 21 (currently amended): A process according to claim 15, wherein the jet roughens the surface of the inner metallic bond coat layer and the process further comprises depositing a replacement outer metallic bond

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coat layer on the inner metallic bond coat layer and then a replacement
ceramic topcoat on the replacement outer metallic bond coat layer..

Claim 22 (original): A process according to claim 15, wherein the
component is a gas turbine engine component.